ALLEN

CHAPTER **14** **Inserting The Missing Character**

In such type of questions, a figure, a set of figures, an arrangement or a matrix is given, each of which bears certain characters, be it numbers, letters or a group/combination of letters/numbers; following a certain pattern. The candidate is required to decipher this pattern and accordingly find the missing character in the figure.
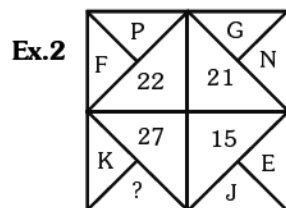
Solved Examples

Directions : Find the missing character from among the given alternatives.

Ex.1

20160 ?	4
480	4
96	8
	24
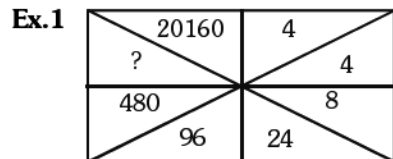
(1) 860   (2) 1140   (3) 2880   (4) 3240

Sol. Clearly, moving clockwise, we observe the following pattern : $4 \times 1 = 4$; $4 \times 2 = 8$; $8 \times 3 = 24$; $24 \times 4 = 96$; $96 \times 5 = 480$.

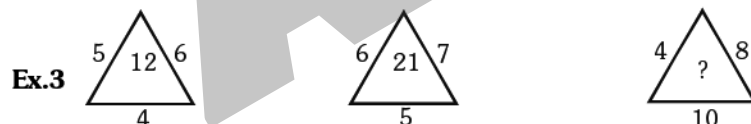So, required number = $(480 \times 6) = 2880$. Hence, the answer is (3).

Ex.2

	P	G	
F	22	21	N
	27	15	
K	?	J	E

(1) M   (2) P   (3) Q   (4) S

Sol. Putting A = 1, B = 2, C = 3, D = 4, ..., X = 24, Y = 25, Z = 26, we have:

F + P = 6 + 16 = 22; G + N = 7 + 14 = 21; J + E = 10 + 5 = 15.

Since K = 11, so value corresponding to missing letter = (27 – 11) = 16.

So, the missing letter is the 16th letter of the English alphabet, which is P. Hence, the answer is (2).

Ex.3

5 ╱12╲ 6   6 ╱21╲ 7   4 ╱ ? ╲ 8
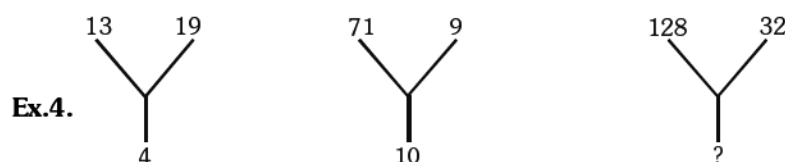   4   5   10

(1) 22   (2) 34   (3) 32   (4) None of these

Sol. Clearly, we have = $\dfrac{5 \times 6 \times 4}{10} = 12$; $\dfrac{6 \times 7 \times 5}{10} = 21$;

So, missing number = $\dfrac{4 \times 8 \times 10}{10} = 32$
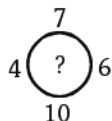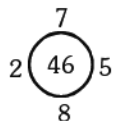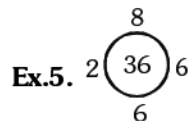
Hence, the answer is (3).

Ex.4.

13   19   71   9   128   32
   4   10   ?

(1) 10   (2) 15   (3) 20   (4) 25

Sol. Clearly, we have : $\dfrac{13+19}{8} = 4$; $\dfrac{71+9}{8} = 10$

So, missing number $= \dfrac{128+32}{8} = 20$

Hence, the answer is (3).

Ex.5.

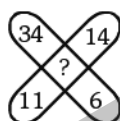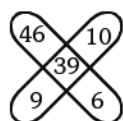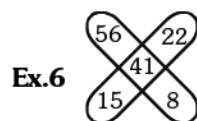(1) 42   (2) 46   (3) 48   (4) 50

Sol. We have: $(8 \times 6) - (2 \times 6) = 36$, $(7 \times 8) - (2 \times 5) = 46$

∴ Missing number $= (7 \times 10) - (4 \times 6) = 46$

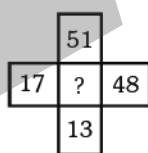Hence, the answer is (2).

Ex.6

(1) 12   (2) 25   (3) 48   (4) 52

Sol. We have: $(56 + 15) - (22 + 8) = 41$, $(46 + 9) - (10 + 6) = 39$

So, missing number $= (34 + 11) - (14 + 6) = 25$

Hence, the answer is (2).

Ex.7
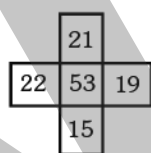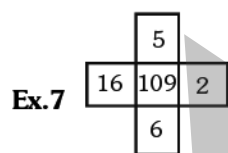
(1) 7   (2) 25   (3) 49   (4) 129

Sol. We have: $(16 - 6)^2 + (5 - 2)^2 = 10^2 + 3^2 = 109$; $(22 - 15)^2 + (21 - 19)^2 = 7^2 + 2^2 = 53$

So, missing number $= (17 - 13)^2 + (51 - 48)^2 = 4^2 + 3^2 = 25$

Hence, the answer is (2).

Ex.8

1	2	3
4	5	6
7	8	9
27	38	?

(1) 49   (2) 50   (3) 51   (4) 52

Sol. In the first column, $(4 \times 7) - 1 = 27$

In the second column, $(5 \times 8) - 2 = 38$

So, missing number $= (6 \times 9) - 3 = (54 - 3) = 51$

Hence, the answer is (3).

Ex.9.

18	24	32
12	14	16
3	?	4
72	112	128

(1) 2   (2) 3   (3) 4   (4) 5

Sol.   In the first column, $12 \times (18 \div 3) = 72$

In the third column, $16 \times (32 \div 4) = 128$

Let the missing number be x. Then, in the second column, we have :

$14 \times (24 \div x) = 112 \Leftrightarrow 24 \div x = 8 \Leftrightarrow x = 3$

Hence, the answer is (2).

Ex.10

F	I	O
A	J	K
E	M	?

(1) P   (2) R   (3) S   (4) V

Sol.   Putting A = 1, B = 2, C = 3, ..., M = 13, ..., X = 24, Y = 25, Z = 26, we have:

In the first row, F + I = 6 + 9 = 15 = O

In the second row, A + J = 1 + 10 = 11 = K

So, in the third row, missing letter = E + M = 5 + 13 = 18 = R

Hence, the answer is (2).

Ex.11

3C	2B	4A
27A	?	64B
9B	4A	16C

(1) 8C   (2) 12B   (3) 16C   (4) 18C

Sol.   In each row, out of the letters A, B and C, each of these must appear once. Also, in each column, the product of first and third numbers is equal to the second number. So, the missing number will be (2×4) i.e. 8 and the missing letter will be C. Thus, the answer is 8C. Hence the answer is (1).

Ex.12   CK   16   9   JR

         OS   24   19   TX

         KM   ?   ?   PV

(1) 14, 21   (2) 21, 14   (3) 56, 84   (4) 84, 56

Sol.   Putting A = 1, B = 2, C = 3, ..., M = 13, ..., X = 24, Y = 25, Z = 26, we have:

$JR = \dfrac{J+R}{2} + 2 = \dfrac{10+18}{2} + 2 = 16$; $CK = \dfrac{C+K}{2} + 2 = \dfrac{3+11}{2} + 2 = 9$;

$TX = \dfrac{T+X}{2} + 2 = \dfrac{20+24}{2} + 2 = 24$; $OS = \dfrac{O+S}{2} + 2 = \dfrac{15+19}{2} + 2 = 19.$
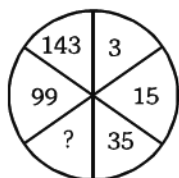
So the missing numbers are:

(i) $PV = \dfrac{P+V}{2} + 2 = \dfrac{16+22}{2} + 2 = 19 + 2 = 21$;

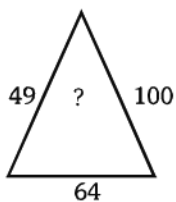(ii) $KM = \dfrac{K+M}{2} + 2 = \dfrac{11+13}{2} + 2 = 12 + 2 = 14.$

Hence, the answer is (2).

EXERCISE

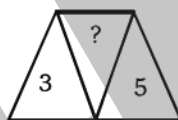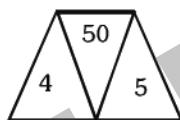**Directions (Q.1 to Q.14) :** Find the missing character in each of the following :

1.

 (1) 63   (2) 56   (3) 60   (4) 65

2.

 (1) 8710   (2) 1078   (3) 8107   (4) 789

3.

 (1) 35   (2) 40   (3) 49   (4) 53

4.

 (1) 82   (2) 124   (3) 100   (4) 64

5.

5	9	7
4	5	3
1	6	8
40	100	?

 (1) 70   (2) 60   (3) 50   (4) 80

6.

12	6	81
17	5	121
6	8	?

 (1) 49   (2) 64   (3) 70   (4) 50

7.

12 → ↗ 8   16 → ↗ 7   25 → ↗ 21

↓ 80   ↓ 207   ↓ ?

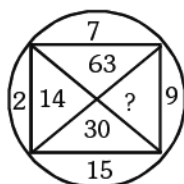(1) 184   (2) 210   (3) 241   (4) 425

8.

406   ?
81   5   3
16

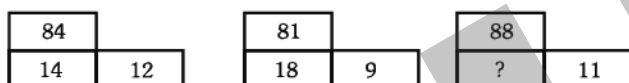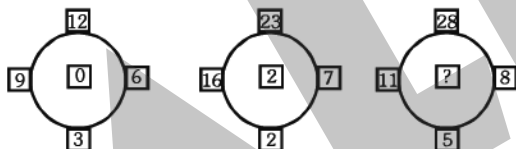(1) 1   (2) 731   (3) 1625   (4) 2031

9.

7
63
2 14 ? 9
30
15

(1) 33   (2) 145   (3) 135   (4) 18

10.

84	
14	12

81	
18	9

88	
?	11

(1) 16   (2) 21   (3) 61   (4) 81

11.

12   23   28
9 [0] 6   16 [2] 7   11 [?] 8
3   2   5

(1) 15   (2) 14   (3) 20   (4) 12

12.

4 9
? 20
90 43

(1) 40   (2) 47   (3) 133   (4) 185

13.

5 3   2 7   6 7
63   41   ?
6 8   3 9   8 5

(1) 26   (2) 82   (3) 83   (4) 86

14.

2 6   3 5   2 3
168   120   ?
3 2   2 1   4 5
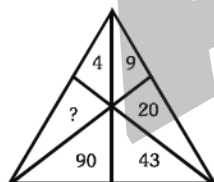
(1) 84   (2) 195   (3) 240   (4) None of these

Direction (Q.15 to Q.17) : In each of the following questions, a matrix of certain character is given. These characters follow a certain trend, row-wise or column-wise. Find out this trend and choose the missing character from the given alternatives.

15.

6	11	25
8	6	16
12	5	?

(1) 18   (2) 16   (3) 12   (4) 10

16.

13	54	?
7	45	32
27	144	68

(1) 42   (2) 36   (3) 6   (4) 4

17.

72	24	6
96	16	12
108	?	18

(1) 12   (2) 16   (3) 18   (4) 20

Direction (Q.18 to Q.20) : In each of these questions, which character when placed at the sign of interrogation shall complete the matrix ?

18.

A	D	H
F	I	M
?	N	R

(1) K   (2) N   (3) O   (4) P

19.

A	D	G
D	I	N
I	P	?

(1) V   (2) W   (3) X   (4) Y

20.

H	K	Q
C	G	O
E	J	?

(1) T   (2) P   (3) N   (4) L

BRAIN TEASERS

Directions (Q.21 to Q.25) : Find the missing character in each of the following :

21.
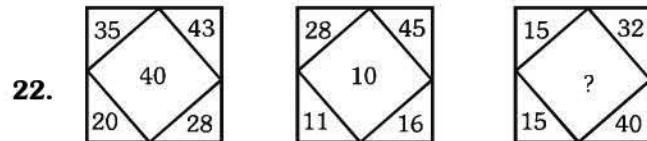
15 (14) 8 with 10 above, 8 below; 9 (8) 5 with 8 above, 6 below; 11 (?) 8 with 6 above, 4 below

(1) 6   (2) 8   (3) 9   (4) 12

22.

Square: 35, 43, 40, 20, 28; Square: 28, 45, 10, 11, 16; Square: 15, 32, ?, 15, 40

(1) 25   (2) 38   (3) 35   (4) 25

23.

3 (510) 5 with 1 above, 4 below; 2 (650) 4 with 3 above, 6 below; 0 (?) 2 with 1 above, 8 below

(1) 610   (2) 660   (3) 670   (4) 690

24.

51	11	61
64	30	32
35	?	43

(1) 25   (2) 27   (3) 32   (4) 37

25.

B	G	N
D	J	R
G	N	?

(1) U   (2) V   (3) W   (4) X

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	3	2	3	3	1	1	4	3	1	2	4	2	2	2
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	4	1	1	2	1	1	2	4	2	3					

EXERCISE

QUESTIONS RELATED TO VARIOUS OLYMPIADS

1. In the given diagram there is a linear relationship between the two integers occupying opposite sectors. The value of the missing integer is

(1) 23   (2) 27   (3) 35   (4) 16

Direction (Q.2 & Q.3) : Find the missing character in each of following.

2.

6	6	8
5	7	5
4	3	?
120	126	320

(1) 4   (2) 8   (3) 12   (4) 16

3.

$1 \underset{8}{\overset{64}{(10)}} 27$ $8 \underset{27}{\overset{125}{(14)}} 64$ $27 \underset{64}{\overset{216}{(?)}} 125$

(1) 2   (2) 9   (3) 17   (4) 18

4. In the given matrix the values of A, B and C respectively are

9	A	12
B	10	7
8	C	11

(1) A = 13, B = 11, C = 9

(2) A = 13, B = 9, C = 11

(3) A = 9, B = 11, C = 13

(4) A = 9, B = 13, C = 11

Direction (Q.5 to Q.10) : Which number will replace the question mark?

5.

(1) 8   (2) 4   (3) 10   (4) 6

6.
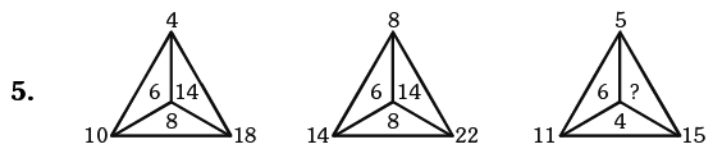
(1) 0   (2) 2   (3) 11   (4) 12

7.

7 B	5 C	6 B
3 C	9 B	19 A
15 A	17 A	?

(1) 10 C (2) 12 C (3) 14 B (4) 16 C

8.

7	9	21	27
4	2	36	18
9	4	54	?

(1) 18 (2) 24 (3) 36 (4) 48

9.

25 (18) 16 with 9 above, 36 below; 81 (26) 64 with 4 above, 49 below; 64 (?) 144 with 25 above, 36 below

(1) 31 (2) 23 (3) 24 (4) 25

10.

Triangle: 8, 7 with 61, 5 below; Triangle: 9, 6 with ?, 5 below; Triangle: 6, 4 with 29, 5 below
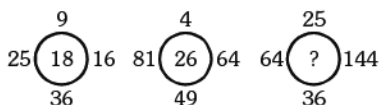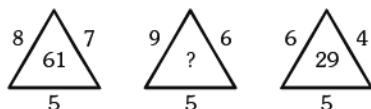
(1) 59 (2) 63 (3) 46 (4) 51

11. In the given question, which number will replace the question mark?

First figure: center 492 with 6, 8, 9, 4, 7, 5 around. Second figure: center 572 with 5, 4, 9, 8, 6, 7 around. Third figure: center ? with 3, 5, 5, 2, 7, 4 around.
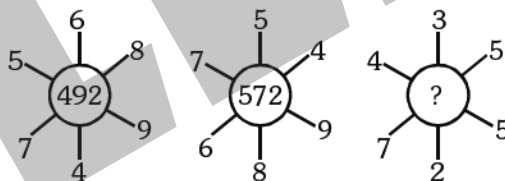
(1) 115 (2) 130 (3) 135 (4) 140

12. Here is a magic square, created using the four numbers 10, 20, 30, 40 once in each row, column or diagonal. The value of A + B is ____.

C	10	D	E
A	30	F	G
B	H	20	K
L	M	N	10

(1) 10 (2) 20 (3) 30 (4) 40

13. Find the missing number in the given figure.

Circle divided into 8 sectors: ?, 2, 3, 4, 5, 5, 7, 9

(1) 10 (2) 11 (3) 12 (4) 13

14. Find the missing character if the given matrix follows a certain rule row-wise or column-wise.

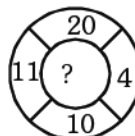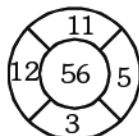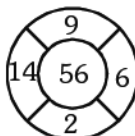| 18	24	32
12	16	16
3	?	4
72	96	128

(1) 2　　　　　　(2) 3　　　　　　(3) 4　　　　　　(4) 5

15. A set of the figures carrying certain characters ,is given. Assuming that the characters in the each figure follow the same pattern, find the missing character.

(1) 210　　　　　(2) 450　　　　　(3) 70　　　　　(4) 150